Beyond Speculative Ethics in HRI? Ethical Considerations and the Relation to Empirical Data

Sara Ljungblad
Mobile Life at SICS
Kista, Sweden
saral@sics.se

Stina Nylander
Mobile Life at SICS
Kista, Sweden
stny@sics.se

Mie Nørgaard
The IT University of Copenhagen
Copenhagen, Denmark
mienoergaard@itu.dk

ABSTRACT

We discuss the difference between understanding robot ethics as something that is grounded in philosophical ideas about a potential future design, and understanding robot ethics as something that is grounded in empirical data. We argue, that understanding "robots" as a relatively homogenous group of designs for which we can formulate general ethics may lead to a foresight of future robot designs that includes ideas and concerns that are not feasible or realistic. Our aim is to exemplify a complementing perspective, by shedding light on two different robotic designs. We discuss their relation to specific use practices and user experiences, and provide some early ethical reflections and design concerns.

Categories and Subject Descriptors

H.5.2 [**Information Interfaces and Presentation**]: User Interfaces – *theory and methods, user-centred design*

General Terms

Design, Human Factors, Theory.

1. INTRODUCTION

Both researchers and science fiction authors have pointed towards a number of ethical concerns that may arise when robots take part of everyday life in society. The robots we know from everyday life, however, appear mostly limited to vacuum cleaners, lawn movers and robotic toys, which do not match the advanced science fiction robots that seemingly shape the discussion of robot ethics today. As a result, ethical concerns for of robots may not be grounded in empirical data and users studies, but instead take Asimov's laws as a starting point for an ethical discussion [3], discuss ethics from potential use situation projected into the future [4,5,6], or discuss roboethics on a general level [7].

Arguably, researchers need to think ahead in an area such as robotics. Technology is evolving fast and constantly creates new possibilities. One could argue that it would be irresponsible not to speculate about what ethical dilemmas could arise around future robots and their use. However, we argue that a perspective that arises from empirical use of robotic artifacts, is needed to complement the ongoing discussion about robot ethics. A user centered perspective with focus on actual use of existing robots in a real environment may reveal ethical implications related to real practices and everyday life, which otherwise may be missed or not well understood. These implications may be different than those identified in futuristic scenarios, and are likely to shed light on peoples existing practices, everyday situations and lifestyles, and how these affect the use and experience of robotic artefacts. More importantly, a better understanding of such ethical implications can support both existing and future robots.

We will first shed light on some existing discussions on ethics in the HRI field, and then exemplify some early ethical implications and design concerns of robotic artifacts, which are already part of our everyday life or are close to entering the market.

HRI'10, 3, 2011, Lausanne, Switzerland.

2. SPECULATIVE ETHICS IN HRI

The science fiction stories by Asimov describe a world relying on universal laws for robots, while pointing to how even very simple rules may cause systems to fail when robots interact with people. Even though the laws were designed for relatively similar science fiction robots, namely autonomous multipurpose agents that work alone, the laws are still often addressed and discussed as general ethical guidelines for a vast number of robot designs [3]. Norman suggests that in fact Asimov's laws can not be fully implemented until "machines have a powerful and effective capability for reflection, including meta-knowledge (knowledge of its own knowledge) and self-awareness of its state, activities, and intentions" [3]. Researchers also contributes to the ethical discussion by speculating in ethics concerning future robots designs, including ethical implications of elderly citizens left in the care of robots [4,5], or how it would affect children's psychological development to have robots as nannies [6]. Similar to Asimov's science fiction perspectives on ethical concerns, such discussions are based on assumptions of a certain robot design, functionality and use situation. In many cases, this is because the discussed robots do not yet exist on the market, or are expensive emerging technologies. While speculative use scenarios arguably have valuable for discussing the future, we believe that solely looking at speculative robot designs may miss ethical perspectives and design concerns that appear in use situations.

We argue that HRI researchers should include knowledge about the ethical implications and design challenges that arise from the use of existing robotic products, when discussing robot ethics. In general, we believe that HRI researchers should avoid focusing primarily on pre-defined notions and visions of robots that may not be technically feasible [2]. Rather, it is important to find knowledge from the existing social reality and how people already

are making use of technology. This concern has already been voiced in a related field, namely in the technically oriented research field of ubiquitous computing, where many problems have been overlooked and assumed to be solved technically in the coming future. Visions are clean and seamless, while "the practice is inevitably considerably messier" [1]. Thus a technical research field may miss important considerations that occur in the everyday, by focusing to closely on a previously defined vision.

3. USER AND EXPERIENCE CENTRED PERSPECTIVES ON ETHICS

At the moment, we are studying a *hospital robot* that conducts transportations, for example blood samples between a department and the lab, in order to support the staff with transportation errands. The robot is 120 cm height, 65 cm wide, 115 cm long, having an appearance as a cabinet on wheels.

We are also studying people that are using a robotic arm as an *eating aid*. The robotic arm has a spoon attached and is manipulated by buttons, automatically picking up food from the area that the users is choosing. The aid supports people with disabilities in their hands and arm to feed themselves.

3.1 Different Users Pose Different Ethical Implications for Use of Robots

As always, it is important to distinguish between different user groups when discussing the value of design. In the case of the hospital robot, we need to consider how the robot is experienced. This is very much depending on who you are and your previous experiences. If you are a visitor or a new patient, the experience might be entirely strange, leaving you uncertain about what to expect. You may wonder: What is that? Will it see me and stop or move away? Does it talk? If you are a staff member and regularly meet the robot, you are likely know more what to expect from the robot based on your previous experience. Your concerns may rather be about how the robot would be experienced by new patients, if it is improving your existing work routines or not, and if it on a longer term will lead to reduce the hospital staff.

In the case of our second robot example, the eating aid has been used by people who appreciate being able to feed themselves for example to increase a feeling of independence . However, we need to take different users and use contexts into account, and consider how those shape users' needs and interests in any robotic artefact. Different users look differently on what is, for example, considered an enjoyable eating situation. Some disabled users may argue that eating themselves with the robotic aid would cost too much energy that they would instead like to use on other things that may be more rewarding. Moreover, the aid need to be possible to adjust in order to fit different kinds of disabilities, and feeding preferences. If it does not fit with their specific disability and lifestyle, it may not succeed in providing a good eating experience, and may not be used.

3.2 Different Robot Designs Pose Different Ethical Implications and Design Challenges

A hospital robot can be designed as a robotic nurse or as — in our case — a transporting device. Any design will involve communicate specific values that may relate to ethical concerns, and are a result of specific design choices. Could hospital robots decrease the human staff and create a less desired high quality patient experience, or even create a less desired work situation for the human staff? The transportation robot is designed to increase the time that the staff can spend with patients, as it supports nurses with the intention that they should spend less time leaving the department to run errands. Our preliminary results show that even if the nurses had a strong desire to be close to the patients as much as possible, they also had concerns if introducing robots could lead to reducing staff. We saw that the need of transportation errands varied throughout the day. Sometimes the nurses are extremely busy with patients, which also where the times where the robot could offload and support them to stay with the patient. At other times, running an errand could be considered as a desired break from the department.

For the robotic eating aid, consider the different consequences of designing the eating aid as a social assistant robot compared to an autonomous device that would feed the person automatically. The difference between experiencing the product as being fed, or experiencing of being in control of the feeding, exemplifies how different design choices pose different ethical implications that can affect the user, their daily experience and overall life quality.

4. CONCLUSION

We have shown how ethical discussions may take different starting points and lead to different implications. We want to complement ethical perspectives that are grounded in not yet existing robots, by exemplifying some early ethical reflections and design concerns that are grounded in empirical studies of two different robotic artifacts.

5. ACKNOWLEDGMENTS

This work is part of the LIREC project, in the European Community's Seventh Framework Programme (FP7/2007-2013) under grant agreement n° 215554.

6. REFERENCES

[1] Bell, G., Dourish, P. Yesterday's tomorrows: note on ubiquitous computing's dominant vision. Journal of Personal and Ubiquitous Computing, 2006.

[2] Fernaeus, Y., Jacobsson, M., Ljungblad, S. and Holmquist, L.E. 2009. Are we living in a robot cargo cult?. In Proc HRI '09, ACM, New York, NY, USA, 279-280.

[3] Norman, D. Emotional Design: Why We Love (or Hate) Everyday Things. Basic Books, New York, 2005

[4] Sharkey A.J.C. and Sharkey. N.E. Granny and the robots: Ethical issues in robot care for the elderly, Ethics and Information Technology, Springer Netherlands. Springelink. July 04, 2010

[5] Sharkey, N.E. (2008) The Ethical Frontiers of Robotics, Science, 322. 1800-1801

[6] Sharkey, N.E. and Sharkey, A.J.C. (2010) The crying shame of robot nannies: an ethical appraisal, Journal of Interaction Studies, 11, 161-190

[7] Veruggio G. and Operto, F. Robotethics: a Bottom-up Interdiciplinary Discourse in the Field of Applied Ethics in Robotics. International review od Information Ethics. Vol 6 (12/2006).